

Docket No. 10014406-3

Amendments to the Claims:

Status of Claims:

Claims 1-28 are pending for examination after the present amendment.

Claim 27 is amended by the present amendment.

Claims N/A are canceled by the present amendment.

Claims 1, 8, 9, 14, 15, 20, 21, 24, and 26 are in independent form.

1. (Previously Presented) A fluid ejection device comprising:

an internal power supply path configured to provide a substantially constant voltage;
nozzles;

firing resistors, wherein each firing resistor corresponds to a corresponding one of the nozzles, wherein each firing resistor and corresponding nozzle are located in one zone of a plurality of zones on the fluid ejection device, and wherein each zone has a plurality of firing resistors and corresponding nozzles; and

addressable select logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones so that selected firing resistors in the same zone are coupled to a same fire pulse, wherein the same fire pulse controls an initiation and a duration in which the selected firing resistors in the same zone are coupled to the internal power supply path to thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing resistors.

2. (Original) The fluid ejection device of claim 1, wherein the select logic couples each fire pulse to a unique one or more zones for each value of the select address.

3. (Original) The fluid ejection device of claim 2 wherein the fluid ejection device is coupled to an electronic controller, wherein the select logic includes one or more multiplexers, and wherein the electronic controller provides the select address and the fire pulses.

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4. (Original) The fluid ejection device of claim 1, wherein the zones are organized on the fluid ejection device into rows and columns, wherein if a value of the select address is a first select address, the select logic couples each fire pulse to each row so that each firing resistor in each zone in the row is coupled to the same fire pulse, and wherein if the value of the select address is a second select address, the select logic couples each fire pulse to each column so that each firing resistor in each zone in the column is coupled to the same fire pulse.

5. (Original) The fluid ejection device of claim 4 wherein the fluid ejection device is coupled to an electronic controller, wherein the select logic includes one or more multiplexers, and wherein the electronic controller provides the select address and the fire pulses.

6. (Original) The fluid ejection device of claim 1, further comprising:
feed slots, wherein each zone is defined to include only the nozzles in fluid communication with at least one feed slot, and wherein each feed slot has at least one zone.

7. (Original) The fluid ejection device of claim 6, wherein the nozzles in fluid communication with the at least one feed slot are disposed on the fluid ejection device to be adjacent to the at least one feed slot on either a first side or a second side of the at least one feed slot, wherein each zone is defined to include only the nozzles positioned on the first side, or only the nozzles positioned on the second side, and wherein either the first side or the second side has at least one zone.

8. (Previously Presented) A fluid ejection device comprising:
an internal power supply path configured to provide a substantially constant voltage;
nozzles;
firing resistors, wherein each firing resistor corresponds to a corresponding one of the nozzles, wherein each firing resistor and corresponding nozzle are located in one zone of a plurality of zones on the fluid ejection device, and wherein each zone has at least one firing resistor and corresponding nozzle;

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addressable select logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones so that selected firing resistors in the same zone are coupled to a same fire pulse, wherein the same fire pulse controls an initiation and a duration in which the selected firing resistors in the same zone are coupled to the internal power supply path to thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing resistors; and

at least two parallel and adjacent feed slots, wherein the nozzles are disposed on the fluid ejection device to be adjacent to the feed slots, wherein each zone is defined to include only the nozzles in fluid communication with the adjacent feed slots.

9. (Previously Presented) A fluid ejection assembly, comprising:

at least one fluid ejection device, each fluid ejection device including:

an internal power supply path configured to provide a substantially constant voltage;

nozzles;

firing resistors, wherein each firing resistor corresponds to a corresponding one of the nozzles, wherein each firing resistor and corresponding nozzle are located in one zone of a plurality of zones on the fluid ejection device, wherein each zone has a plurality of firing resistors and corresponding nozzles; and

addressable select logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones so that selected firing resistors in the same zone are coupled to a same fire pulse, wherein the same fire pulse controls an initiation and a duration in which the selected firing resistors in the same zone are coupled to the internal power supply path to thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing resistors.

10. (Original) The fluid ejection assembly of claim 9, wherein the select logic couples each fire pulse to a unique one or more zones for each value of the select address.

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11. (Original) The fluid ejection assembly of claim 9, wherein the zones are organized on the fluid ejection device into rows and columns, wherein if a value of the select address is a first select address, the select logic couples each fire pulse to each row so that each firing resistor in each zone in the row is coupled to the same fire pulse, and wherein if the value of the select address is a second select address, the select logic couples each fire pulse to each column so that each firing resistor in each zone in the column is coupled to the same fire pulse.

12. (Original) The fluid ejection assembly of claim 9, further comprising: fluid feed slots, wherein each zone is defined to include only the nozzles in fluid communication with at least one fluid feed slot, and wherein each fluid feed slot has at least one zone.

13. (Original) The fluid ejection assembly of claim 12, wherein the nozzles in fluid communication with the at least one fluid feed slot are disposed on the fluid ejection device to be adjacent to the at least one fluid feed slot on either a first side or a second side of the at least one fluid feed slot, wherein each zone is defined to include only the nozzles positioned on the first side, or only the nozzles positioned on the second side, and wherein either the first side or the second side has at least one zone.

14. (Previously Presented) A fluid ejection assembly, comprising:

at least one fluid ejection device, each fluid ejection device including:

an internal power supply path configured to provide a substantially constant voltage;

nozzles;

firing resistors, wherein each firing resistor corresponds to a corresponding one of the nozzles, wherein each firing resistor and corresponding nozzle are located in one zone of a plurality of zones on the fluid ejection device, wherein each zone has at least one firing resistor and corresponding nozzle;

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addressable select logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones so that selected firing resistors in the same zone are coupled to a same fire pulse, wherein the same fire pulse controls an initiation and a duration in which the selected firing resistors in the same zone are coupled to the internal power supply path to thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing resistors; and

at least two parallel and adjacent fluid feed slots, wherein the nozzles are disposed on the fluid ejection device to be adjacent to the fluid feed slots, wherein each zone is defined to include only the nozzles in fluid communication with the adjacent fluid feed slots.

15. (Previously Presented) A method of firing a fluid ejection device, the method comprising:

providing a select address;

coupling, based on the select address, multiple fire pulses to firing resistors located in zones so that selected firing resistors in the same zone are coupled to a same fire pulse, wherein each firing resistor corresponds to one of a plurality of nozzles, wherein each firing resistor and corresponding nozzle are located in one of the zones, and wherein each zone has a plurality of firing resistors and corresponding nozzles; and

controlling, with the same fire pulse, an initiation and a duration in which the selected firing resistors in the same zone are coupled to the internal substantially constant voltage to thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing resistors.

16. (Original) The method of claim 15 further comprising:

coupling each fire pulse to a unique one or more zones for each value of the select address.

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17. (Original) The method of claim 15 further comprising:

organizing the zones on the fluid ejection device into rows and columns;

coupling each fire pulse to each row so that each firing resistor in each zone in the row is coupled to the same fire pulse if the value of the select address is a first select address; and

coupling each fire pulse to each column so that each firing resistor in each zone in the column is coupled to the same fire pulse if the value of the select address is a second select address.

18. (Original) The method of claim 15 further comprising:

providing fluid feed slots wherein each zone for each fluid feed slot is defined to include only the nozzles in fluid communication with at least one fluid feed slot, wherein each fluid feed slot has at least one zone.

19. (Original) The method of claim 18 further comprising:

defining each zone to include only the nozzles positioned to be adjacent to the at least one fluid feed slot on either a first side or a second side, wherein either the first side or the second side has at least one zone.

20. (Previously Presented) A method of firing a fluid ejection device, the method comprising:

providing a select address;

coupling, based on the select address, multiple fire pulses to firing resistors located in zones so that selected firing resistors in the same zone are coupled to a same fire pulse, wherein each firing resistor corresponds to one of a plurality of nozzles, wherein each firing resistor and corresponding nozzle are located in one of the zones, and wherein each zone has at least one firing resistor and corresponding nozzle;

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controlling, with the same fire pulse, an initiation and a duration in which the selected firing resistors in the same zone are coupled to the internal substantially constant voltage to thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing resistors; and

providing at least two parallel fluid feed slots, wherein the nozzles are disposed on the fluid ejection device to be adjacent to the fluid feed slots, wherein each zone is defined to include only the nozzles in fluid communication with the adjacent fluid feed slots.

21. (Previously Presented) A fluid ejection device comprising:

an internal power supply path configured to provide a substantially constant voltage;

nozzles;

firing resistors, wherein each firing resistor corresponds to a corresponding one of the nozzles, wherein each firing resistor and corresponding nozzle are located in one zone of a plurality of zones on the fluid ejection device, and wherein each zone has a plurality of firing resistors and corresponding nozzles and at least a first zone of the plurality of zones has a plurality of firing resistors and corresponding nozzles; and

logic responsive to a select address to couple multiple fire pulses to the firing resistors in the zones so that selected firing resistors in the first zone are coupled to a same fire pulse, wherein the same fire pulse controls an initiation and a duration in which the selected firing resistors in the first zone are coupled to the internal power supply path to thereby control fluid ejection from the nozzles in the first zone corresponding to the selected firing resistors.

22. (Previously Presented) The fluid ejection device of claim 21, wherein the same fire pulse controls the initiation and the duration in which a plurality of selected firing resistors in the first zone of the plurality of zones are coupled to the internal power supply path.

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23. (Previously Presented) The fluid ejection device of claim 21, wherein:

the first zone of the plurality of zones comprises a plurality of primitive groups, wherein each firing resistor and corresponding nozzle of the first zone of the plurality of zones are each located in one primitive group of the plurality of primitive groups; and

the selected firing resistors in the first zone of the plurality of zones are each in corresponding different primitive groups.

24. (Previously Presented) A method of firing a fluid ejection device, the method comprising:

providing a select address;

coupling, based on the select address, multiple fire pulses to firing resistors located in zones so that selected firing resistors in a same zone are coupled to a same fire pulse, wherein each firing resistor corresponds to one of a plurality of nozzles, wherein each firing resistor and corresponding nozzle are located in one of the zones, and wherein each zone has at least one firing resistor and corresponding nozzle and at least a first zone of the plurality of zones has a plurality of resistors and corresponding nozzles; and

controlling, with the same fire pulse, an initiation and a duration in which selected firing resistors in the first zone are coupled to an internal substantially constant voltage to thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing resistors.

25. (Previously Presented) The method of firing a fluid ejection device of claim 24, wherein the plurality of resistors and plurality of corresponding nozzles of the at least one zone of the plurality of zones are arranged in a plurality of primitive groups, each of the resistors and corresponding nozzles being located in one of the primitive groups; and

the selected resistors in the first zone of the plurality of zones are each located in corresponding different primitive groups.

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26. (Previously Presented) A fluid ejection device comprising:

an internal power supply path configured to provide a substantially constant voltage;

a plurality of nozzles, wherein each nozzle corresponds to a corresponding one of a plurality of firing resistors;

a plurality of zones, wherein each zone comprises a plurality of nozzles and corresponding firing resistors; and

at least one multiplexer responsive to a select address to couple a first fire pulse to a first plurality of firing resistors in a first zone, so that a first plurality of selected firing resistors in the first zone are coupled to the first fire pulse, wherein the first fire pulse controls an initiation and a duration in which the first plurality of selected firing resistors in the first zone are coupled to the internal power supply path to thereby control fluid ejection from the nozzles in the first zone corresponding to the selected firing resistors.

27. (Currently Amended) The fluid ejection device of claim 26, wherein the at least one multiplexer couples ~~each fire pulse including~~ the first fire pulse to a unique one or more zones for each value of the select address.

28. (Previously Presented) The fluid ejection device of claim 26, wherein the at least one multiplexer comprises a plurality of multiplexers each operable to provide a fire pulse to a unique one zone.

29 - 35. (Canceled).